

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A system for performing client-centric load balancing of multiple globally-dispersed servers, the servers being accessed by clients connecting through an ISP having a domain name server (DNS-ISP), the servers further having an authoritative domain name server (DNS-A) associated therewith, the system comprising:
 - a first domain name server deployed on an Internet backbone (DNS-B); and
 - a plurality of load balancing domain name servers (DNS-LBs) deployed in a physical proximity from which the actual network latency of producing a network latency similar to the clients may be measured, the DNS-LBs having stored therein IP address information of the multiple globally-dispersed servers to be load balanced, the DNS-LBs each sending mapping information to the DNS-B relating the DNS-LB's IP address to an IP address of the DNS-ISP to which the DNS-LB is in a physical proximity from which the actual network latency of producing a network latency similar to the clients may be measured, the DNS-LBs determining performance characteristics of each of the multiple globally-dispersed servers.
2. (Original) The system of claim 1, wherein the DNS-B stores the mapping information for the plurality of DNS-LBs to forward IP address queries to one of the DNS-LBs closest to the DNS-ISP from which the IP address query originated, and wherein the DNS-LB closest to the DNS-ISP returns the IP address to the DNS-ISP of the server having the best performance characteristics.

3. (Original) The system of claim 1, wherein the DNS-B stores the mapping information for the plurality of DNS-LBs to forward IP address queries to one of the DNS-LBs closest to the DNS-ISP from which the IP address query originated, and wherein the DNS-LB closest to the DNS-ISP returns the IP address of the DNS-LB to the DNS-ISP.

4. (Original) The system of claim 1, wherein the DNS-B provides its IP address information to the DNS-A to enable the DNS-A to forward IP address queries to the DNS-B.

5. (Original) The system of claim 4, wherein the DNS-B receives IP address information from the DNS-A for the servers to be load balanced.

6. (Original) The system of claim 1, wherein the DNS-LB is a client of the DNS-ISP.

7. (Original) The system of claim 1, further comprising a DNS-B deployed on each Internet backbone, and wherein each DNS-B contains the mapping information for all of the DNS-LBs stored therein.

8. (Original) The system of claim 1, wherein the DNS-LB transmits updated mapping information upon a change of an IP address of the DNS-ISP.

9. (Original) The system of claim 1, wherein each of the DNS-LBs transmit performance information of the servers to the DNS-B, and wherein the DNS-B utilizes the mapping information to determine the proper DNS-LB performance information to utilize to

select the IP address of the server having the best performance characteristics to return to the DNS-ISP from which an IP address query originated.

10. (Currently Amended) A method of performing client-centric load balancing of multiple globally-dispersed servers, the servers being accessed by clients connecting through an ISP having a domain name server (DNS-ISP), the servers further having an authoritative domain name server (DNS-A) associated therewith, the method comprising the steps of:

receiving IP address information from the DNS-A for the servers to be load balanced;

providing the IP address information to a plurality of load balancing domain name servers (DNS-LB);

receiving mapping information associating DNS-ISP IP address information to IP address information of a -DNS-LB located in a physical proximity from which the actual network latency of ~~producing a network latency similar to~~ the clients may be measured, the DNS-LB capable of determining server performance from a location physically proximate to the ISP's point of presence; and

referring address inquiries from a DNS-ISP to a physically proximate DNS-LB in accordance with the mapping information.

11. (Original) A computer-readable medium having computer executable-instructions for performing the steps of claim 10.

12. (Currently Amended) A method of performing client-centric load balancing of multiple globally-dispersed servers, the servers being accessed by clients connecting through an ISP having a domain name server (DNS-ISP), the servers further having an authoritative domain name server (DNS-A) associated therewith, the method comprising the steps of:

obtaining, by a load balancing domain name server (DNS-LB), IP address information for a DNS-ISP, the DNS-LB located in a physical proximity from which the actual network latency of the clients may be measured; ~~producing a network latency similar to the DNS-LB;~~

providing a mapping of an IP address of the DNS-LB to the IP address information of the DNS-ISP to an external domain name server;

receiving IP address information for the servers;

monitoring performance of the servers at the received IP addresses; and

providing at least one IP address for a server in response to a name query selected based on the monitoring step.

13. (Original) The method of claim 12, further comprising the steps of:
detecting a change in the DNS-ISP IP address; and
updating the mapping of the IP address of the DNS-LB to the IP address information of the DNS-ISP to the external domain name server.

14. (Original) The method of claim 12, further comprising the steps of
receiving selection criteria for the selection of an IP address;
receiving a name query from the DNS-ISP; and
wherein the step of providing at least one IP address for a server in response to a name query selected based on the monitoring step further comprises the step of providing at least one IP address for a server in response to a name query selected based on the monitoring step and on the selection criteria.

15. (Original) A computer-readable medium having computer-executable instructions for performing the steps of claim 12.

16-19. (Canceled).

20. (Currently Amended) A method of performing client-centric load balancing of multiple globally-dispersed servers, the servers being accessed by clients connecting through Internet service providers (ISPs) at a point of presence (POP), each ISP having a domain name server (DNS-ISP), the servers further having an authoritative domain name server (DNS-A) associated therewith containing information regarding the IP addresses of the servers, the method comprising the steps of:

deploying a first plurality of load balancing domain name servers (DNS-LBs) in ~~close~~ a physical proximity from which the actual network latency of the clients connecting to the ISP POPs may be measured;

deploying a second plurality of second level domain name servers (DNS-Bs) on the Internet backbones and regional provides;

communicating IP address information for the DNS-Bs to the DNS-As to enable the DNS-As to refer name queries to the DNS-Bs;

providing, by the DNS-LBs to the DNS-B, mapping information associating an IP address of the DNS-LB ~~producing a network latency similar~~ to the DNS-ISP to an IP address of the DNS-ISP to enable the DNS-B to refer name queries from a DNS-ISP to DNS-LB ~~producing a network latency similar~~ to the DNS-ISP; and

communicating IP address information of the servers to the DNS-LBs;

monitoring, by the DNS-LBs at ~~a location producing a network latency similar to the~~ ISP POP, performance of the servers; and

providing, by the DNS-LB in response to a query from the DNS-ISP, the IP address of a server based on the step of monitoring.

21. (Cancelled)

22. (Cancelled)

23. (Currently Amended) A method for load balancing content servers, each of the content servers associated with a domain name, the method comprising:

receiving a request to resolve the domain name from an ISP DNS server;

identifying at least one load balancing server from a group of load balancing servers, the identified load balancing server situated at a physical proximity from which the actual network latency of a client connecting ~~location producing a network latency similar to the~~ ISP DNS server may be measured;

sending the IP address of the identified load balancing server to the ISP DNS server, the identified load balancing server configured to determine at least one of the content servers with certain characteristics relative to the location and to resolve the domain name with an IP address associated with the determined content server.

24. (Previously Presented) The method as recited in claim 23, wherein the certain characteristics include load level, availability, network latency, or network cost.

25. (Previously Presented) The method as recited in claim 23, wherein the identified load balancing server is situated closest to the ISP DNS server among the group of load balancing servers.

26. (Currently Amended) A system for load balancing a group of content servers located at multiple sites, the group of content servers associated with a domain name, each content server configured to interact with clients through ISP DNS servers associated with the clients, the system comprising:

load balancing servers configured to resolve the domain name with an IP address associated with at least one of the content servers, each load balancing server situated at a physical proximity from which the actual network latency of a client connecting location ~~producing a network latency similar~~ to at least one of the ISP DNS servers may be measured, each load balancing server also configured to monitor the content servers and to resolve the domain name with the IP address of at least one of the content servers with certain characteristics relative to the location of the load balancing server;

a referral server configured to receive requests to resolve the domain name from the ISP DNS servers, the referral server configured to respond to each request by determining at least one of the load balancing servers ~~that is located at a location producing a network latency similar to the ISP DNS server~~ from which the request was received and referring the ISP DNS server to the determined load balancing server;

wherein requests to resolve the domain name from each ISP DNS server are responded by a load balancing server ~~situated at a location producing a network latency similar to the ISP DNS server~~, and wherein each load balancing server responds to each request by determining at least one of the content servers that has certain characteristics relative to the location and by resolving the domain name in the request with the IP address of the determined content server.

27. (Previously Presented) The system as recited in claim 26, wherein the certain characteristics include load level, availability, network latency, or network cost.